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HOUSEKEEPERS' CHAT

Saturday, March 6, 1937

(FOR BROADCAST USE ONLY)

Subject: "NEWS NOTES FROM WASHINGTON." Information from the Office of Information, United States Department of Agriculture.

--ooOoo--

Today's letter from Washington, D. C., reports as usual some of the many and varied doings in the laboratories of the Department of Agriculture.

Our correspondent writes: "If I make many more calls on the entomologists, I'm likely to be re-writing all the old songs. After hearing about some of the recent insect studies, I found myself singing, 'Only a fly in a gilded cage,' and a sentimental ditty about the beat in the heart of a cockroach.

"The inspiration for these songs came from hearing about the laboratory flies raised in cages and the new instrument that photographs and measures insect heartbeats.

"As you know, the entomologists are continually testing out the insecticides we now have and searching for new ones. For these tests, they have to have insects at hand. So they sometimes raise them for the purpose.

"You don't have to pity the caged fly in the laboratory, however. His cage may not be gilded exactly, but he does live a luxurious life and, as a result, is much hardier than the fly who has freedom and is out on his own. The scientists happened to learn this fact during the course of tests on fly-killing sprays. Many of the fly-sprays now on the market are solutions of pyrethrum flowers in kerosene. Some farmers, particularly dairymen, prefer to make their own sprays from the same materials.

"To test the spray, the investigators release about 100 flies in a small room. They spray a standard quantity of spray into the room, and after a specified number of minutes, count the paralyzed flies and the active flies. After 24 hours they count the dead and the living flies. The average of several tests gives a reliable score for the preparation.

"In summer it is often practical to make one of the tests with wild flies and another with flies raised for the purpose in the laboratory. As a rule, a fly-spray will kill from 10 to 15 percent more wild flies than tame. Superior resistance of the laboratory-reared insect is an advantage because this makes it practical to test a spray at any season. If the spray will knockout the tame flies, the product is certain to be effective if used as directed in homes or dairy barns.

"Now some news about the heart of the cockroach. Dr. J. Franklin Yeager of the Bureau of Entomology has recently devised a method of taking large clear pictures of insect heartbeats. Such pictures make it possible to compare the behavior of the heart before and after contact with any one of the substances that look promising in the Department's persevering hunt for better insecticides. The new method also makes it possible to learn more about the way in which the insect heart-mechanism operates, and to gain physiological information that will be helpful in the search for better ways of controlling insect pests.

"Heartbeat records have been obtained from the cockroach, a useful experimental insect that serves the entomologists in somewhat the same way that the white rat or guinea pig serves the zoologist. To obtain a record, the entire back of the insect with the tiny heart -- too small to handle easily alone -- attached, is dissected from the anesthetized roach and placed upside down in a beeswax receptacle. The heart tissues are kept alive with salt solution that acts as artificial blood.

"In case you are interested in the mechanics of the new device for photographing the insect heart, here's how it works. With human hair, attached at one end to the heart and at the other end to a tiny glass lever, every motion of the heartbeat is passed on to the vertical arm of the lever, stained to make it opaque. A strong beam of light turned on the lever passes through the lenses of a powerful microscope and is then projected into the eye of a special camera. A moving roll of photographic paper in the camera registers the fluctuations of the greatly magnified shadow cast by the opaque arm, the movements of which correspond exactly with the heart movements. The heartbeat-pictures developed from this photography are called 'mechano-cardiagrams' by the scientists.

"Analysis of these heartbeat pictures that have already been taken show that in general the insect heart contracts, relaxes, and rests much as the human heart does. But unlike the human heart, the insect heart often expands slightly and suddenly just before it contracts. Just why the scientists don't yet know.

"Now when nicotine is added to the salt solution which keeps the heart tissues alive, the pictures show that the heart loses its ability to relax. As more and more nicotine is added, the heart relaxes less and less until finally it ceases to relax at all, and, in a contracted state, stops beating.

"That's all the insect news I've collected today. But here's a little house-heating item from Department engineers, which indicates that a cool house aids the family pocketbook. They say that the cost of even moderately high temperatures in the average home in winter is much greater than most people suspect. Tests of oil burners show that in Washington, D. C., for example, nearly 20 percent more fuel is needed to heat a house to 75 degrees than to 70 degrees, and about 7 percent more fuel is required to heat to 72 degrees than to 70. Of course the engineers aren't suggesting that you keep your house uncomfortably chilly in order to save fuel. They are just emphasizing that overheating a house increases fuel costs as well as producing an uncomfortable and possibly unhealthful condition.

"By the way, anyone interested in the various oil-heating tests made by Department engineers in cooperation with Johns Hopkins University, can write to the Superintendent of Documents for Circular No. 406 called 'Oil Burners for Home Heating.'" The price is 5 cents.

This concludes our Washington letter for today.